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Columbia River Channel Improvement Study—Economic Analysis

The benefits of improving the navigation channel result from reductions in transportation costs for each commodity. Currently, there are a number of vessels that load at less than their maximum capacity due to current channel depth constraints. For those vessels, a 3-foot deepening would essentially allow an increase in capacity of 6,000 to 7,400 tons.

For example, a bulk carrier with a 43-foot maximum draft typically has a maximum cargo capacity of approximately 60,000 tons. In a 40-foot channel, the capacity of this vessel is reduced to 54,000 tons. One-way vessel operating costs for a vessel carrying a load of wheat or corn out of the Columbia River average $750,000 per trip. Therefore, a 3-foot deepening can reduce transportation costs from $13.90 to $12.60 per ton, or $1.30 per ton.

For wheat, the additional three feet of channel depth will result in an average transportation cost-per-ton reduction of four to five percent, or a saving of $0.75 to $1.10 per ton. Benefits on corn shipments are projected to be even more, with cost reductions averaging six to eight percent, which typically amounts to $1 to $1.20 per ton. Container transportation benefits are slightly greater than for bulk commodities, with cost reductions averaging 11 to 13 percent, or $2.50 to almost $3 per ton.

Three alternatives have been analyzed which would allow vessel operators to more fully load their vessels. A non-structural measure involving a tide reporting system, which would allow vessels to take advantage of the daily tidal influences on the depth availability, is the lowest cost alternative, providing a high benefit-to-cost ratio. A channel-deepening alternative, increasing the channel depth from 40 feet to 43 feet, provides the highest net benefits. Regional port alternatives could also provide high benefits, but only at substantially greater costs than any other alternative.

Columbia River Channel Improvement Study Alternatives, Economic Costs and Benefits
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Alternative	First Costs	Annualized First Costs	Total Annual Maintenance Costs	Total Costs, Average Annual	Benefits	Net Benefits	BCR
43' Channel	$180,991	$13,322	$3,896	$17,218	$39,412	$22,194	2.29
41' Channel	$65,246	$4,803	$1,198	$6,001	$14,193	$8,192	2.37
42' Channel	$105,251	$7,747	$2,294	$10,041	$27,690	$17,649	2.76
Non-Structural	$900	$66	$100	$166	$4,223	$4,057	25.44
Regional Port - Full Service	$440	$32,387		$32,387	$39,412	$7,025	1.22
Regional Port - Topping Off	$250	$18,402	$2,314	$20,716	$39,412	$18,696	1.90